Cultivating Partnerships for the Yellow Larkspur

by Holly Forbes

Photo © Robert Potts/California Academy of Sciences

The picturesque coast of California north of San Francisco is the only home for a rare but beautiful wildflower, the yellow larkspur *(Delphinium luteum)*. Although the species was probably never widely distributed, several factors, including habitat loss due to quarrying and development, livestock grazing, and overcollecting, have reduced its distribution to two rocky areas within the region's coastal scrub zone. Both of the remaining sites are on privately owned land. This herbaceous perennial was listed as rare under the California Endangered Species Act in 1979 and as endangered under the federal Endangered Species Act in 2000.

The University of California Botanical Garden at Berkeley is a participating institution in the Center for Plant Conservation (CPC). As such, the garden accepted responsibility to work toward the conservation of rare plants in central and northern California. The yellow larkspur was added to the CPC national collection in 1990.

Yellow larkspur makes a spectacular horticultural subject, especially in a rock garden, as long as it is kept dry during the summer for its natural dormancy period. The beautiful flowers are pollinated by hummingbirds. Its attractiveness and the ease of its culture work both for and against its survival in natural habitats. One factor in the decline of the yellow larkspur was overcollecting for the horticultural trade in the 1940s and 1950s. However, plants can be grown easily in cultivation for future reintroductions.

Mrs. Betty Guggolz and her husband Jack, longtime members of the Milo Baker Chapter of the California Native Plant Society, have been monitoring the two wild populations for over 20 years and growing plants on their property from one of them. Mrs. Guggolz is eager to use plants from her cultivated population to supplement the natural populations and introduce the species into suitable habitat to create another population. The U.C. Botanical Garden, which is growing plants in cultivation from the other wild population, is working with Mrs. Guggolz toward these conservation goals.

Mrs. Guggolz's plans to introduce the yellow larkspur to appropriate habitats and to augment an existing population depended on determining that the *ex situ* (cultivated) populations were not contaminated by hybridization with other larkspur species. This would help satisfy concerns of the California Department of Fish & Game (CDFG) that our end result would meet the strictest of genetic conservation standards.

It was clear that more partners were needed to work on this project. When then-graduate student Jason Koontz* approached me for assistance with his dissertation project on the gypsum-loving larkspur *(Delphinium gypsophilum)*, our meeting became a perfect opportunity to get him involved with our efforts to study the yellow larkspur. Diana Hickson and Roxanne Bittman, of the CDFG Plant Conservation Program and Natural Diversity Data Base, respectively, provided a research permit and field assistance. Jason, in collaboration with his major professor, Dr. Pamela Soltis** of Washington State University, designed a protocol to examine the genetic variability of the species and the potential hybrid contamination of the *ex situ* populations. They found that while the two *ex situ* populations have somewhat reduced genetic variability in comparison to one of the natural populations, it wasn't significant enough to bar us from using them in a future introduction effort, nor was there any evidence of hybridization in cultivation.

The results of their study were published in the December 2001 issue of *Conservation Biology* ("Genetic Diversity and Tests of the Hybrid Origin of the Endangered Yellow Larkspur"). The article was dedicated to the memory of Jack Guggolz, who passed away in October 2001.

Local land trusts have expressed support for a reintroduction effort, and we are working with Mrs. Guggolz to survey for potential sites. More information on this species' life history, environmental requirements, pollination biology, and seed dispersal will be needed, however, to promote a successful reintroduction effort.

Holly Forbes is Curator of the University of California Botanical Garden at Berkeley.

University of California, Berkeley, Botanical Garden photo

*Dr. Jason Koontz is now a Plant Systematist for the Center for Biodiversity of the Illinois Natural History Survey and an Affiliate Assistant Professor of Plant Biology, University of Illinois at Urbana-Champaign.

**Dr. Pamela Soltis is now a curator at the Florida Museum of Natural History, Gainesville.